# CENTRAL STATES TIMBER RESOURCES

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CENTRAL STATES FOREST EXPERIMENT STATION

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# CENTRAL STATES TIMBER RESOURCES

In 1952 the U. S. Forest Service began work on a Timber Resource Review - the latest and most comprehensive appraisal of our Nation's forest situation ever made. Preliminary results were announced in October, 1955 and made available for intensive review by key personnel throughout the fields of forestry and economics. A final revised report is scheduled for publication and release to the public in 1957.

The TRR combines information derived from special field studies with that obtained from assembling and updating the best data already available. Area and volume statistics were adjusted to January 1, 1953; timber cut and utilization figures are for the calendar year 1952. The task was made possible through excellent cooperation between federal and state agencies and private industries.

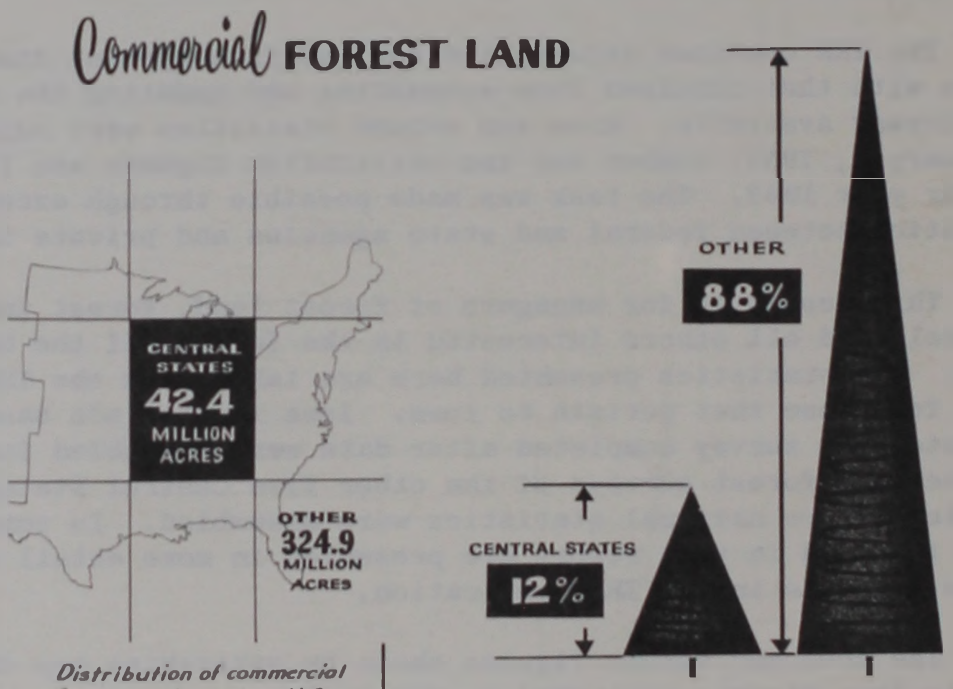
This report is for managers of forest land, forest industry personnel, and all others interested in the forests of the Central States. The statistics presented here are taken from the TRR data except for those that pertain to Iowa. Iowa figures are based on a more intensive survey completed after data were assembled for the TRR. Regular forest surveys of the other five Central States were completed before national statistics were assembled. In some cases, tables included in this report are presented in more detail than will be possible in the TRR publication.

The area and volume figures shown by ownerships may differ slightly from figures published by the agencies concerned. This is because of differences in definitions, specifications, log rules, and cruising standards. Unless indicated otherwise, the board-foot volumes are expressed in net volume log scale - International 1/4-inch rule; cubic foot volumes show net log volume excluding bark; and cord volumes are in net volume including bark in standard cords (128 cubic feet).

# FOREST AREA

When pioneers first settled in the Central States, forests covered 64 percent of the land area. Generations of farming and land clearing reduced the forest cover to about 22 percent. The forests are now largely concentrated in the mountainous areas of Missouri and Kentucky and the southern portions of Ohio, Indiana, and Illinois. Some counties are still more than 90 percent forested while others have less than 2 percent forest.

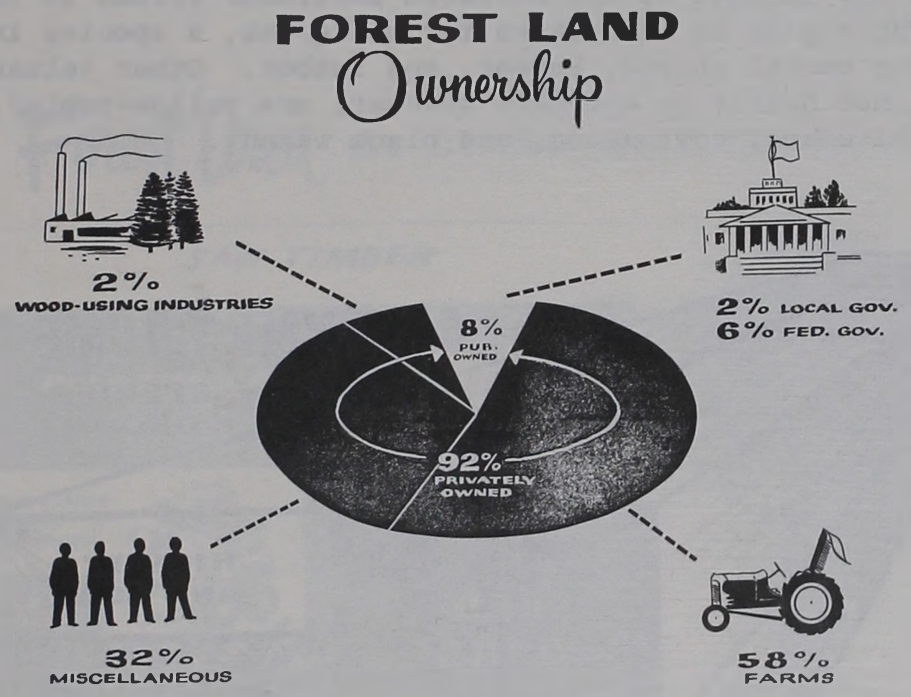
Almost every one of the 42.4 million acres of forest land in the Central States is capable of producing sawlog-size timber and virtually the entire area is accessible with modern logging equipment. Less than 1 percent of the forest land is reserved from timber harvesting.




*Distribution of commercial forest area in eastern U.S.*

# OWNERSHIP

Ninety-two percent of the forest land in this region is privately owned. The Federal Government owns a little less than 6 percent and the remainder is owned by state, county, municipal, or other public agencies. The largest national forests in the Central States are located in Missouri and Kentucky. There are about 886,000 private owners of forest land in the Central States. The average ownership is 44 acres and only 8 percent of the owners have more than 100 acres of forest land each. Farmers own about 25 million acres of forest land.

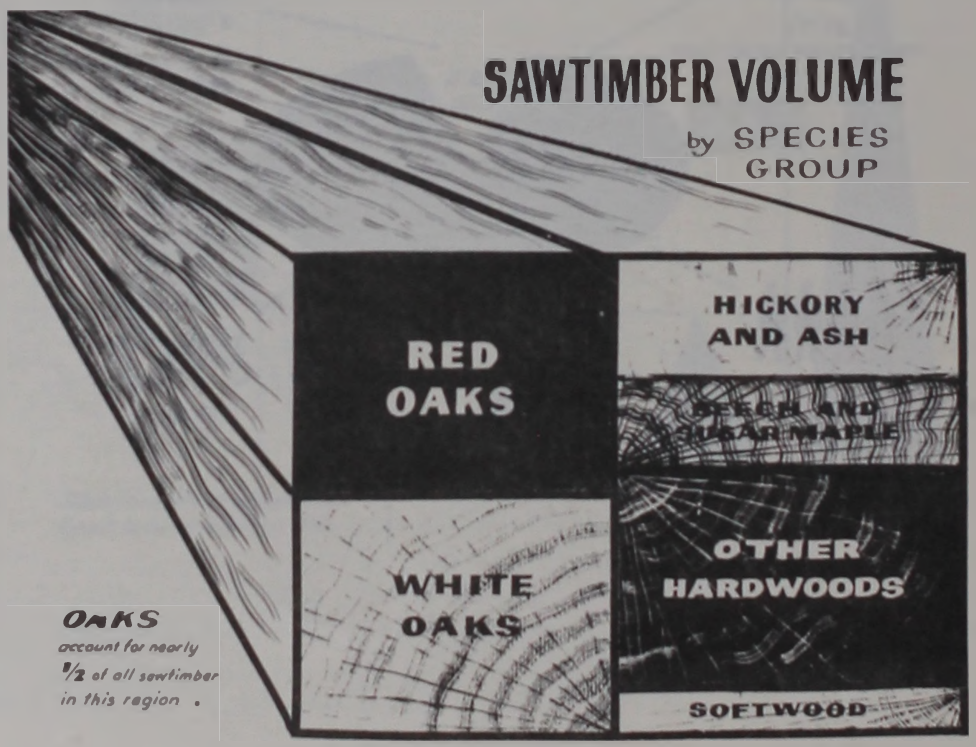


# FOREST TYPES AND SPECIES

About two-thirds of the Central States forest area is predominantly oak and hickory. This type is the source of most of the fine white oak, red oak, yellow-poplar, and black walnut timber grown in this region. On the other hand, the type includes some very low-quality stands. Another 18 percent of the forest land is in the elm-ash-cottonwood type. These stands are usually found along streams and poorly drained bottomland. Many fine logs are harvested from this type for use as container veneer. The remaining 14 percent includes the maple-beech-birch type, the pine and oak-pine types, and other minor types.

With 96 percent of the volume in the Central States in hardwood species it is clear that forestry in this region is primarily concerned with growing hardwoods. Pine volume is steadily increasing as plantations develop and natural restocking of pine occurs in some areas but it is doubtful that the Central States will ever become an important softwood producing region.

Fifty percent of the hardwood sawtimber volume is found in oaks. The region is well known for white oak, a species in great demand for barrel staves, veneer, and lumber. Other valuable species, not nearly so abundant however, are yellow-poplar, sugar maple, white ash, cottonwood, and black walnut.

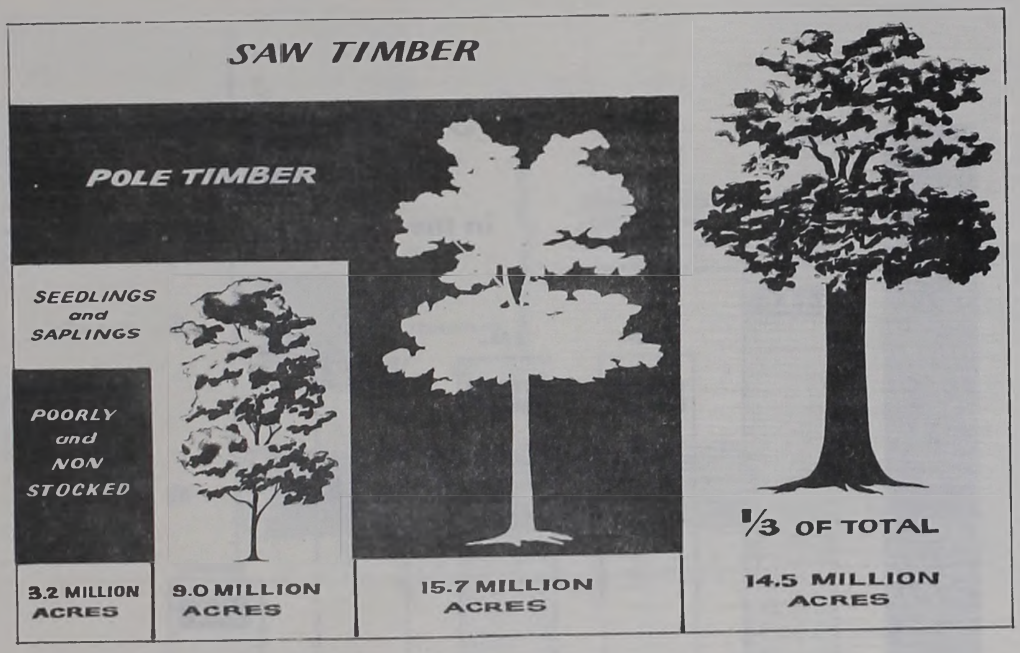


# STAND SIZE

Only 34 percent of the forest area is classed as sawtimber - that is, stands that have 1,500 board-feet or more per acre in trees 11 inches or larger in diameter. Thirty-seven percent of the area is in poletimber stands and 21 percent is in seedling and sapling stands. The remaining 8 percent, although classed as forest land, is non-stocked because of heavy cutting, fire, or other causes.

Stand-size distribution varies greatly throughout the Central States. For example, in Missouri only 13 percent of the forest area is classed as sawtimber while in Indiana and Ohio about half the forest is sawtimber. This variation is due primarily to different treatment of the forest in the past - intensity of cutting, protection from fire and grazing, and other factors combine to result in a wide range of forest conditions.

## Forest Area BY STAND-SIZE CLASS

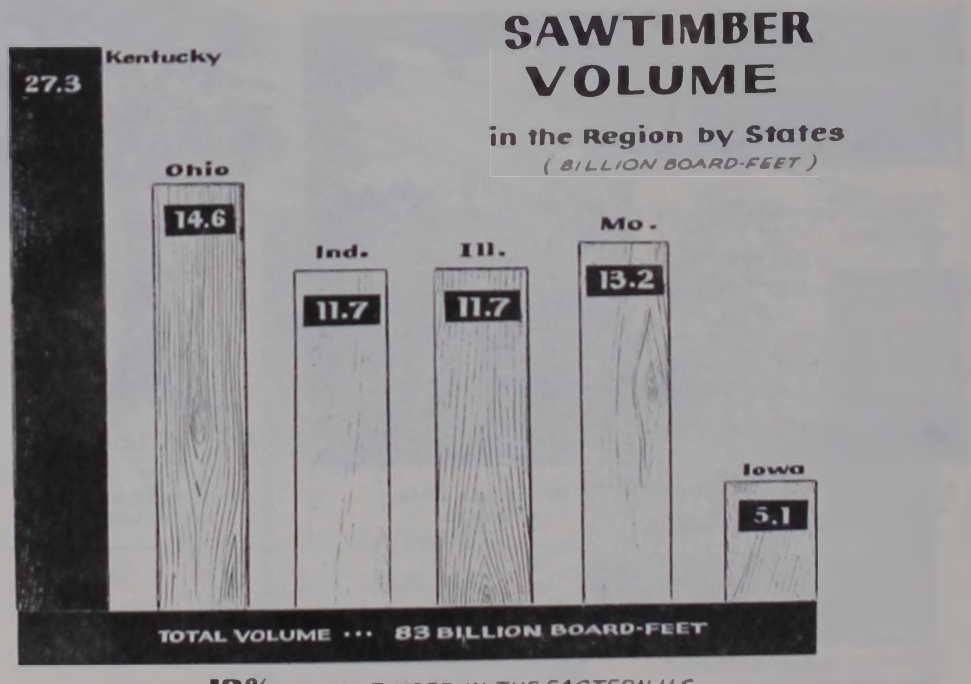


# VOLUME

The original forests of the Central States probably averaged about 10,000 board-feet or more per acre. The average volume now is about 2,000 board-feet per acre. This drop in average volume per acre, combined with reduction in forest area by almost two-thirds, means that in the 150 years or so since the Central States were settled, the timber volume has been reduced to about 7 percent of the original.

Eighteen percent of the sawtimber volume in the Central States is in scattered trees in pole and seedling and sapling stands. This figure ranges from 10 percent in Ohio and Indiana to more than 50 percent in Missouri. Stands of sawtimber, regionwide, average about 4,700 board-feet per acre. In general, the most heavily stocked stands are found in the Corn Belt where demand for timber has not been great and cutting is light. Individual stands, usually protected from cutting, with volumes ranging above 25,000 board-feet per acre may still be found in each of the Central States.

Kentucky, with 33 percent of the total, has more of the sawtimber volume than any other state in the region. Ohio, with 18 percent, has slightly more sawtimber volume than Missouri, despite the fact that Missouri has about three times as much forest area. Illinois and Indiana each have 14 percent of the total; Iowa has only 6 percent.

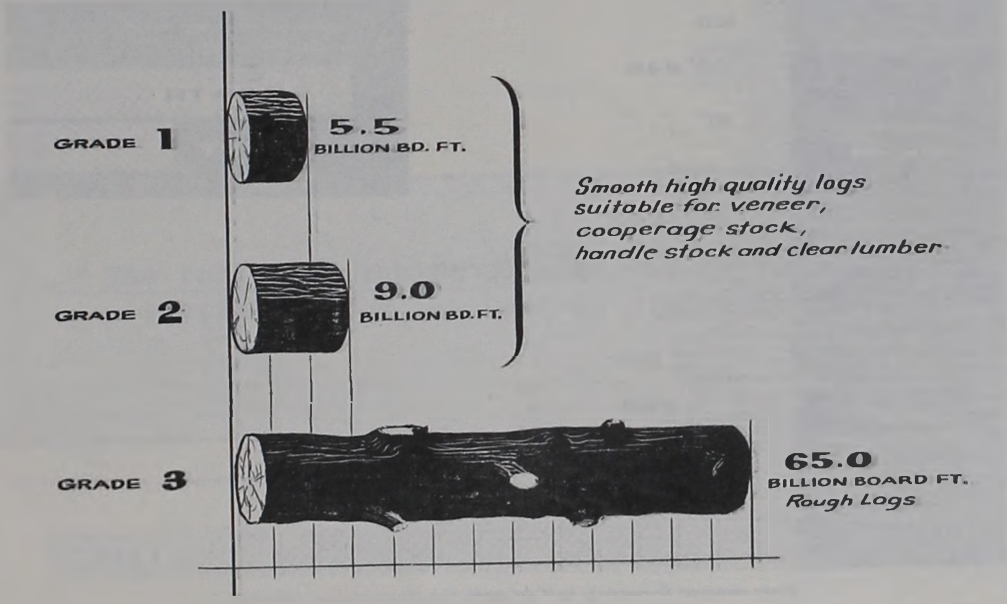


# QUALITY

The quality of hardwood timber is highly variable and therefore volume figures must be broken down by quality classes to be most meaningful. A strong demand exists for veneer logs, stave bolts, and top-quality sawlogs, but low-grade logs are not profitable to harvest under normal market conditions. Only 15 percent of the sawtimber volume in the Central States is in high-quality logs - those that will yield 40 percent or more of their volume in No. 1 common or better lumber. However, studies indicate that about 40 percent of the volume going to sawmills is in high-quality logs and additional high-quality trees are cut for veneer, cooperage, and handle stock. It is not surprising that one out of every five or six sawtimber trees in the forest is a cull and most of the others are low in quality.

## HARDWOOD SAWTIMBER VOLUME

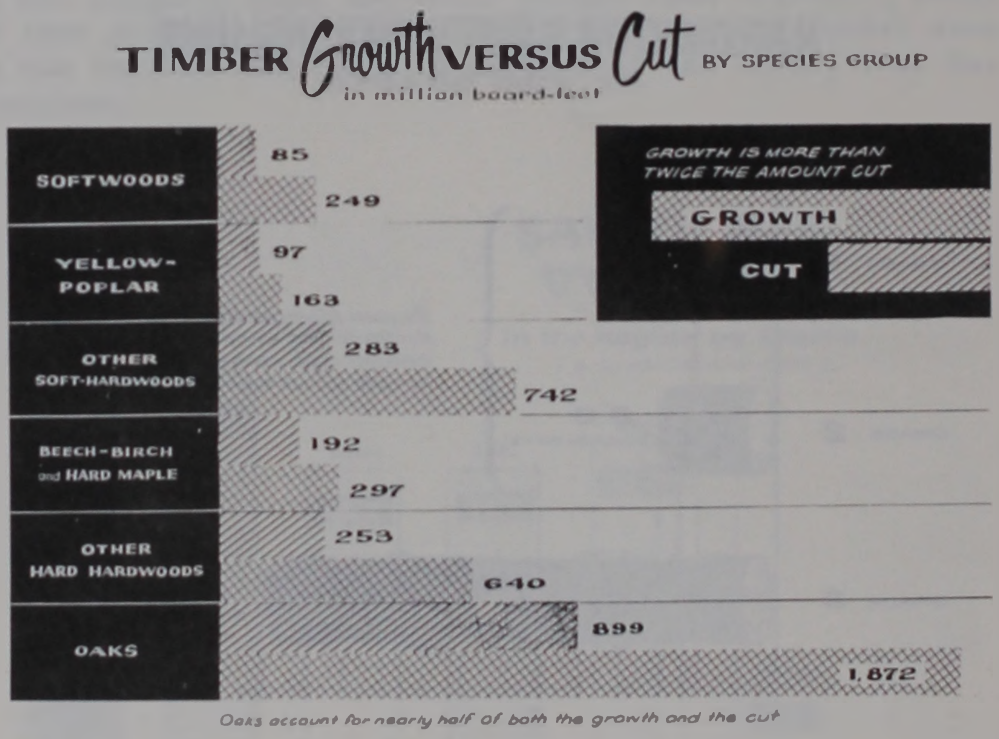
*BY LOG GRADES*



# GROWTH AND DRAIN

The Central States forests, in general, have sufficient growing stock to permit rapid stand improvement by applying good forest management practices. The average volume of growing stock is about 580 cubic feet per acre and 40 percent of it is in trees 10 inches in diameter or smaller; an additional 24 percent is in trees in the 12- and 14-inch diameter classes. To obtain maximum growth and quality most of the volume should be in the 16- and 18-inch diameter classes.

Annual growth of sawtimber in the Central States exceeds 4 billion board-feet. This amounts to about 100 board-feet per acre per year - a figure that could be doubled or tripled with reasonable effort. About 80 percent of the forest land is well enough stocked so that volume will increase rapidly if the stands are adequately protected and well managed. A trend in that direction is indicated by the fact that at the present time the forests are growing more than twice as much as is being harvested.




Oaks account for nearly half of both the growth and the cut

# CONCLUSION

The downward trend of forest area and volume has apparently been halted in the Central States although quality is still declining. Probably there will be no significant reduction in forest area in future years and there are indications that inventory of timber volume on these areas will show a net increase each year. Although demand for timber products is constantly changing, the Nation's ever-increasing population combined with technological advances making possible greater use of wood can be expected to tax our forest resource severely. To insure adequate timber supplies for future generations it is essential that each forest acre be brought to full production.

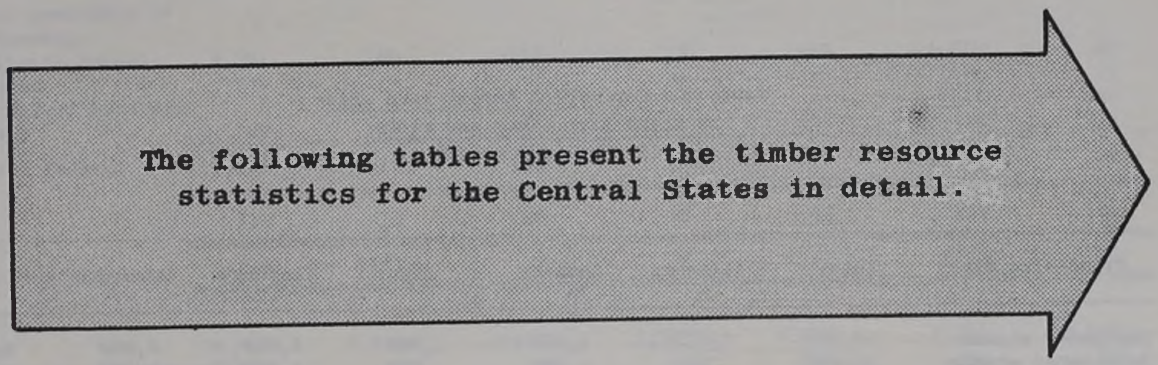


Table 1.--Land area by major class of land
(In thousand acres)

| Land class | Total | Illinois | Indiana | Iowa | Kentucky | Missouri | Ohio |
|---|---|---|---|---|---|---|---|
| Forest land | | | | | | | |
| Commercial | 42,484 | 3,938 | 4,045 | 2,595 | 11,446 | 15,064 | 5,396 |
| Non-commercial | 352[1]/ | 55 | 58 | 25 | 51 | 113 | 50 |
| Total forest land | 42,836 | 3,993 | 4,103 | 2,620 | 11,497 | 15,177 | 5,446 |
| Cropland in farms[2]/ | 87,350 | 21,351 | 11,777 | 22,905 | 6,336 | 13,651 | 11,330 |
| Pasture and range[3]/ | 38,717 | 4,856 | 3,518 | 6,765 | 6,961 | 11,506 | 5,111 |
| Other[4]/ | 21,993 | 5,598 | 3,773 | 3,579 | 719 | 3,971 | 4,353 |
| Total land | 190,896 | 35,798 | 23,171 | 35,869 | 25,513 | 44,305 | 26,240 |

1/ Includes 85,000 acres of forest land currently unproductive for timber, some of which may be currently used for grazing, watershed management, recreation, or wildlife management.
2/ Source: 1950 Census of Agriculture.
3/ Exclusive of that in forest land.
4/ Farmsteads, roads, powerlines, urban, etc.

Table 2.--Commercial forest land area
by stand-size class and state
(In thousand acres)

| Stand-size class | Total | Illinois | Indiana | Iowa | Kentucky | Missouri | Ohio |
|---|---|---|---|---|---|---|---|
| Sawtimber stands | 14,589 | 1,823 | 2,084 | 1,006 | 4,964 | 2,033 | 2,679 |
| Poletimber stands | 15,643 | 981 | 1,337 | 830 | 4,040 | 6,477 | 1,978 |
| Seedling and sapling stands | 8,903 | 729 | 600 | 287 | 1,830 | 4,778 | 679 |
| Nonstocked and other areas | 3,349 | 405 | 24 | 472 | 612 | 1,776 | 60 |
| Total | 42,484 | 3,938 | 4,045 | 2,595 | 11,446 | 15,064 | 5,396 |

Table 3.--Commercial forest land area by stand-size class and degree of stocking

(In thousand acres)

| Stand-size class | Total | Well and medium stocked[1] | Poorly stocked[2] | Nonstocked and other areas[3] |
|---|---|---|---|---|
| Sawtimber stands | 14,589 | 13,450 | 1,139 | -- |
| Poletimber stands | 15,643 | 14,129 | 1,514 | -- |
| Seedling & sapling stands | 8,903 | 6,906 | 1,997 | -- |
| Other | 3,349 | -- | -- | 3,349 |
| Total | 42,484 | 34,485 | 4,650 | 3,349 |

1/ 40 percent or more stocked.
2/ 10 - 39 percent stocked.
3/ Less than 10 percent stocked.

Table 4.--Commercial forest land area by ownership class and state

(In thousand acres)

| Ownership class | Total | Illinois | Indiana | Iowa | Kentucky | Missouri | Ohio |
|---|---|---|---|---|---|---|---|
| Federal ownership or trusteeship: | | | | | | | |
| National Forest | 2,181 | 184 | 112 | 3 | 455 | 1,339 | 88 |
| Indian | 1 | -- | -- | 1 | -- | -- | -- |
| Bureau of Land Mgt. | 1 | -- | -- | -- | -- | (1/) | -- |
| Other | 439 | 32 | 60 | 9 | 217 | 121 | (1/) |
| Total federal | 2,622 | 216 | 172 | 13 | 672 | 1,461 | 88 |
| State | 518 | 10 | 109 | 22 | 53 | 156 | 168 |
| County and municipal | 45 | (1/) | 2 | 2 | (1/) | (1/) | 41 |
| Private: | | | | | | | |
| Farm | 24,658 | 3,050 | 2,878 | 2,282 | 4,903 | 8,498 | 3,047 |
| Wood-using industries[2] | 817 | 10 | 9 | -- | 308 | 460 | 30 |
| Other | 13,824 | 652 | 875 | 276 | 5,510 | 4,489 | 2,022 |
| Total private | 39,299 | 3,712 | 3,762 | 2,558 | 10,721 | 13,447 | 5,099 |
| All ownerships | 42,484 | 3,938 | 4,045 | 2,595 | 11,446 | 15,064 | 5,396 |

1/ Less than 0.5 thousand acres.
2/ Includes lumber, pulp, and other wood-using industries.

Table 5.--Commercial forest land area by ownership class, and stand-size class

(In thousand acres)

| Class of ownership | Total | Sawtimber stands | Poletimber stands | Seedling and sapling stands | Nonstocked and other areas |
|---|---|---|---|---|---|
| Federal ownership or trusteeship: | | | | | |
| National forest | 2,181 | 905 | 539 | 596 | 141 |
| Indian | 1 | (1/) | 1 | (1/) | (1/) |
| Bureau of Land Management | 1 | 1 | -- | -- | -- |
| Other | 439 | 158 | 164 | 95 | 22 |
| Total federal | 2,622 | 1,064 | 704 | 691 | 163 |
| State | 518 | 207 | 210 | 88 | 13 |
| County and municipal | 45 | 22 | 17 | 6 | -- |
| Private | 39,299 | 13,296 | 14,712 | 8,118 | 3,173 |
| All ownerships | 42,484 | 14,589 | 15,643 | 8,903 | 3,349 |

1/ Less than 0.5 thousand acres.

Table 6.--Commercial forest land area in private ownership and number of private owners, by size-class of owner and state

COMMERCIAL FOREST AREA
(In thousand acres)

| Size-class of ownership (acres) | Total | Illinois | Indiana | Iowa | Kentucky | Missouri | Ohio |
|---|---|---|---|---|---|---|---|
| 3 to 100 | 23,021 | 2,684 | 3,219 | 2,155 | 5,249 | 6,331 | 3,383 |
| 100 to 500 | 11,393 | 991 | 485 | 403 | 3,312 | 4,782 | 1,420 |
| 500 to 5,000 | 3,481 | 37 | 15 | -- | 1,616 | 1,630 | 183 |
| 5,000 to 50,000 | 1,404 | -- | 43 | -- | 544 1/ | 704 1/ | 113 |
| Total | 39,299 | 3,712 | 3,762 | 2,558 | 10,721 | 13,447 | 5,099 |

NUMBER OF OWNERS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 3 to 100 | 814,522 | 126,397 | 123,118 | 33,749 | 214,687 | 175,343 | 141,228 |
| 100 to 500 | 67,233 | 4,646 | 3,047 | 989 | 25,805 | 24,596 | 8,150 |
| 500 to 5,000 | 4,229 | 58 | 20 | -- | 2,954 | 1,054 | 143 |
| 5,000 to 50,000 | 87 | -- | 5 | -- | 42 1/ | 32 1/ | 8 |
| Total | 886,071 | 131,101 | 126,190 | 34,738 | 243,488 | 201,025 | 149,529 |

1/ Includes a few ownerships larger than 50,000 acres to avoid possible disclosure of individual owners.

Table 7.--Commercial forest land area in private ownership and number of private owners by type of ownership and state

COMMERCIAL FOREST AREA

(In thousand acres)

| Ownership class | Total | Illinois | Indiana | Iowa | Kentucky | Missouri | Ohio |
|---|---|---|---|---|---|---|---|
| Farm | 24,697 | 3,050 | 2,878 | 2,321 | 4,903 | 8,498 | 3,047 |
| Wood-using industries | 817 | 10 | 9 | -- | 308 | 460 | 30 |
| Other private | 13,785 | 652 | 875 | 237 | 5,510 | 4,489 | 2,022 |
| Total | 39,299 | 3,712 | 3,762 | 2,558 | 10,721 | 13,447 | 5,099 |

NUMBER OF OWNERS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Farm | 766,621 | 116,467 | 108,319 | 31,078 | 207,916 | 168,435 | 134,406 |
| Wood-using industries | 3,041 | 633 | 184 | -- | 1,329 | 608 | 287 |
| Other private | 116,409 | 14,001 | 17,687 | 3,660 | 34,243 | 31,982 | 14,836 |
| Total | 886,071 | 131,101 | 126,190 | 34,738 | 243,488 | 201,025 | 149,529 |

Table 8.--Commercial forest land area in private ownership by size class and type of ownership
(In thousand acres)

| Type of ownership | All classes | 3 to 100 acres | 100 to 500 acres | 500 to 5,000 acres | 5,000 to 50,000 acres | 50,000 acres and larger |
|---|---|---|---|---|---|---|
| Farm | 24,697 | 16,046 | 7,465 | 1,150 | 36 | -- |
| Lumber manufacturer | 541 | 55 | 65 | 347 | 74 | -- |
| Other wood-using | 276 | 1 | 1 | -- | 23 | 251 |
| Other private | 13,785 | 6,919 | 3,862 | 1,984 | 871 | 149 |
| Total | 39,299 | 23,021 | 11,393 | 3,481 | 1,004 | 400 |

Table 9.--Commercial forest land area by major forest type and state
(In thousand acres)

| Forest type | Total | Illinois | Indiana | Iowa | Kentucky | Missouri | Ohio |
|---|---|---|---|---|---|---|---|
| White-red-jack pine | 31 | -- | 9 | -- | 14 | -- | 8 |
| Loblolly-shortleaf pine | 580 | -- | 26 | -- | 220 | 226 | 108 |
| Oak-pine | 1,722 | 12 | 85 | -- | 726 | 793 | 106 |
| Oak-hickory | 28,974 | 2,315 | 2,335 | 1,278 | 7,871 | 12,042 | 3,133 |
| Oak-gum-cypress | 1,280 | 326 | 138 | -- | 150 | 609 | 57 |
| Elm-ash-cottonwood | 7,804 | 1,267 | 993 | 1,219 | 1,601 | 1,390 | 1,334 |
| Maple-beech-birch | 2,024 | 18 | 418 | 78 | 864 | 4 | 642 |
| Aspen-birch | 69 | -- | 41 | 20 | -- | -- | 8 |
| Total | 42,484 | 3,938 | 4,045 | 2,595 | 11,446 | 15,064 | 5,396 |

Table 10.--Net volume of all timber on commercial forest land by class of material, and by softwoods and hardwoods

(In million cubic feet)

| Class of material | Total | Softwoods | Hardwoods |
|---|---|---|---|
| Growing stock: | | | |
| Sawtimber trees: | | | |
| Sawlog portion | 13,334 | 590 | 12,744 |
| Upper stems | 2,243 | 77 | 2,166 |
| Total sawtimber trees | 15,577 | 667 | 14,910 |
| Poletimber trees | 9,246 | 378 | 8,868 |
| Total growing stock | 24,823 | 1,045 | 23,778 |
| Non-growing stock: | | | |
| Sound cull trees | 1,723 | 10 | 1,713 |
| Rotten cull trees | 2,957 | 8 | 2,949 |
| Hardwood limbs | 7,508 | -- | 7,508 |
| Salvable dead sawtimber trees | 81 | -- | 81 |
| Salvable poletimber trees | 29 | -- | 29 |
| Total non-growing stock | 12,298 | 18 | 12,280 |
| Total, all timber | 37,121 | 1,063 | 36,058 |

Table 11.--Net volume of growing stock on commercial forest land by class of material and softwoods and hardwoods, and by state

MILLION CUBIC FEET

| Growing stock class | Total | Illinois | Indiana | Iowa | Kentucky | Missouri | Ohio |
|---|---|---|---|---|---|---|---|
| Sawtimber trees: | | | | | | | |
| Softwood | 667 | 12 | 13 | 1 | 388 | 187 | 66 |
| Hardwood | 14,910 | 2,111 | 2,071 | 1,053 | 4,465 | 2,623 | 2,587 |
| Total | 15,577 | 2,123 | 2,084 | 1,054 | 4,853 | 2,810 | 2,653 |
| Poletimber trees: | | | | | | | |
| Softwood | 378 | 2 | 13 | 3 | 183 | 147 | 30 |
| Hardwood | 8,868 | 925 | 944 | 325 | 2,798 | 2,546 | 1,330 |
| Total | 9,246 | 927 | 957 | 328 | 2,981 | 2,693 | 1,360 |
| Total softwood | 1,045 | 14 | 26 | 4 | 571 | 334 | 96 |
| Total hardwood | 23,778 | 3,036 | 3,015 | 1,378 | 7,263 | 5,169 | 3,917 |
| Total | 24,823 | 3,050 | 3,041 | 1,382 | 7,834 | 5,503 | 4,013 |

MILLION CORDS

| Growing stock class | Total | Illinois | Indiana | Iowa | Kentucky | Missouri | Ohio |
|---|---|---|---|---|---|---|---|
| Sawtimber trees: | | | | | | | |
| Softwood | 9.9 | 0.2 | 0.2 | (1/) | 5.7 | 2.8 | 1.0 |
| Hardwood | 225.8 | 31.9 | 31.4 | 16.0 | 67.6 | 39.7 | 39.2 |
| Total | 235.7 | 32.1 | 31.6 | 16.0 | 73.3 | 42.5 | 40.2 |
| Poletimber trees: | | | | | | | |
| Softwood | 6.4 | (1/) | 0.2 | (1/) | 3.2 | 2.5 | 0.5 |
| Hardwood | 143.0 | 15.0 | 15.2 | 5.2 | 45.1 | 41.1 | 21.4 |
| Total | 149.4 | 15.0 | 15.4 | 5.2 | 48.3 | 43.6 | 21.9 |
| Total softwood | 16.3 | 0.2 | 0.4 | (1/) | 8.9 | 5.3 | 1.5 |
| Total hardwood | 368.8 | 46.9 | 46.6 | 21.2 | 112.7 | 80.8 | 60.6 |
| Total | 385.1 | 47.1 | 47.0 | 21.2 | 121.6 | 86.1 | 62.1 |

1/ Less than 0.05 million cords.

Table 12.--Net volume of growing stock on commercial forest land by species group and state

IN MILLION CUBIC FEET

| Species | Total | Illinois | Indiana | Iowa | Kentucky | Missouri | Ohio |
|---|---|---|---|---|---|---|---|
| Softwoods: | | | | | | | |
| White and red pine | 10 | -- | -- | -- | 10 | -- | -- |
| Southern yellow pine | 748 | -- | 18 | -- | 430 | 229 | 71 |
| Hemlock | 62 | -- | -- | -- | 62 | -- | -- |
| Cypress | 64 | 5 | 1 | -- | 10 | 48 | -- |
| Other | 161 | 9 | 7 | 4 | 59 | 57 | 25 |
| Total softwoods | 1,045 | 14 | 26 | 4 | 571 | 334 | 96 |
| Hardwoods: | | | | | | | |
| Oak | 11,626 | 1,520 | 1,115 | 437 | 3,566 | 3,575 | 1,413 |
| Beech, yellow birch and hard maple | 1,559 | 83 | 379 | 25 | 628 | 46 | 398 |
| Hickory | 2,379 | 267 | 285 | 64 | 962 | 424 | 377 |
| Sweetgum | 281 | 39 | 55 | -- | 158 | 18 | 11 |
| Tupelo and blackgum | 275 | 9 | 34 | -- | 177 | 38 | 17 |
| Yellow-poplar | 884 | 36 | 141 | -- | 495 | 4 | 208 |
| Cottonwood and aspen | 413 | 66 | 35 | 135 | 27 | 126 | 24 |
| Other | 6,361 | 1,016 | 971 | 717 | 1,250 | 938 | 1,469 |
| Total hardwoods | 23,778 | 3,036 | 3,015 | 1,378 | 7,263 | 5,169 | 3,917 |
| Total, all species | 24,823 | 3,050 | 3,041 | 1,382 | 7,834 | 5,503 | 4,013 |

IN MILLION CORDS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Softwoods: | | | | | | | |
| White and red pine | .2 | -- | -- | -- | .2 | -- | -- |
| Southern yellow pine | 11.8 | -- | .3 | -- | 6.7 | 3.7 | 1.1 |
| Hemlock | .9 | -- | -- | -- | .9 | -- | -- |
| Cypress | .9 | 0.1 | (1/) | -- | .1 | .7 | -- |
| Other | 2.5 | .1 | .1 | .0 | 1.0 | .9 | .4 |
| Total softwoods | 16.3 | .2 | .4 | .0 | 8.9 | 5.3 | 1.5 |
| Hardwoods: | | | | | | | |
| Oak | 179.9 | 23.3 | 17.1 | 6.7 | 55.2 | 55.9 | 21.7 |
| Beech, yellow birch and hard maple | 24.1 | 1.3 | 5.9 | .4 | 9.7 | .7 | 6.1 |
| Hickory | 37.3 | 4.2 | 4.5 | 1.0 | 15.0 | 6.7 | 5.9 |
| Sweetgum | 4.5 | .6 | .9 | -- | 2.5 | .3 | .2 |
| Tupelo and blackgum | 4.2 | .1 | .5 | -- | 2.7 | .6 | .3 |
| Yellow-poplar | 13.7 | .6 | 2.2 | -- | 7.6 | .1 | 3.2 |
| Cottonwood and aspen | 6.3 | 1.0 | .5 | 2.1 | .4 | 1.9 | .4 |
| Other | 98.8 | 15.8 | 15.0 | 11.0 | 19.6 | 14.6 | 22.8 |
| Total hardwoods | 368.8 | 46.9 | 46.6 | 21.2 | 112.7 | 80.8 | 60.6 |
| Total, all species | 385.1 | 47.1 | 47.0 | 21.2 | 121.6 | 86.1 | 62.1 |

1/ Less than 0.05 million cords.

Table 13.--Net volume of growing stock on commercial forest land by ownership class and state

(In million cubic feet)

| Class of ownership | Total | Illinois | Indiana | Iowa | Kentucky | Missouri | Ohio |
|---|---|---|---|---|---|---|---|
| Federal ownership or trusteeship: | | | | | | | |
| National Forest | 1,114 | 122 | 50 | 1 | 380 | 504 | 57 |
| Other | 269 | 25 | 46 | 7 | 147 | 44 | 1/ |
| | 1,383 | 147 | 96 | 8 | 527 | 548 | 57 |
| State, county and municipal | 331 | 8 | 80 | 12 | 39 | 59 | 133 |
| Private | 23,109 | 2,895 | 2,865 | 1,362 | 7,268 | 4,896 | 3,823 |
| Total, all ownerships | 24,823 | 3,050 | 3,041 | 1,382 | 7,834 | 5,503 | 4,013 |

1/ Less than 0.5 million cubic feet.

Table 14.--Net volume of growing stock on commercial forest land by species group and diameter class

(In million cords)

| Species group | Total | D.b.h. Class (inches) 5.0-6.9 | 7.0-8.9 | 9.0-10.9 | 11.0 and larger |
|---|---|---|---|---|---|
| Softwoods: | | | | | |
| White and red pine | 0.2 | (1/) | (1/) | -- | 0.2 |
| Southern yellow pine | 11.8 | 1.8 | 3.1 | 2.2 | 4.7 |
| Hemlock | .9 | (1/) | .1 | .1 | .7 |
| Cypress | .9 | (1/) | (1/) | (1/) | .9 |
| Other softwoods | 2.5 | .8 | .6 | .4 | .7 |
| All softwoods | 16.3 | 2.6 | 3.8 | 2.7 | 7.2 |
| Hardwoods: | | | | | |
| Oak | 179.9 | 14.4 | 23.4 | 29.7 | 112.4 |
| Beech-yellow birch-hard maple | 24.1 | 1.6 | 2.3 | 2.7 | 17.5 |
| Hickory | 37.3 | 4.6 | 7.1 | 7.2 | 18.4 |
| Sweetgum | 4.5 | .3 | .7 | .8 | 2.7 |
| Tupelo and blackgum | 4.2 | .2 | .4 | .7 | 2.9 |
| Yellow-poplar | 13.7 | .7 | 1.4 | 1.8 | 9.8 |
| Cottonwood and aspen | 6.3 | .2 | .2 | .6 | 5.3 |
| Other hardwoods | 98.8 | 10.7 | 14.9 | 16.4 | 56.8 |
| All hardwoods | 368.8 | 32.7 | 50.4 | 59.9 | 225.8 |
| All species | 385.1 | 35.3 | 54.2 | 62.6 | 233.0 |

1/ Less than 0.05 million cords.

Table 15.--Net volume of live sawtimber in sawtimber stands and other stands on commercial forest land by softwoods and hardwoods, by state

(In million board-feet)

| Stand-size class | Total | Illinois | Indiana | Iowa | Kentucky | Missouri | Ohio |
|---|---|---|---|---|---|---|---|
| Sawtimber stands | | | | | | | |
| Softwood | 2,672 | 43 | 44 | 1 | 1,791 | 518 | 275 |
| Hardwood | 65,809 | 10,268 | 10,706 | 4,256 | 21,839 | 5,888 | 12,852 |
| Total | 68,481 | 10,311 | 10,750 | 4,257 | 23,630 | 6,406 | 13,127 |
| Other stands[1] | | | | | | | |
| Softwood | 754 | 1 | 10 | 5 | 376 | 291 | 71 |
| Hardwood | 14,409 | 1,382 | 911 | 830 | 3,336 | 6,498 | 1,452 |
| Total | 15,163 | 1,383 | 921 | 835 | 3,712 | 6,789 | 1,523 |
| All stands | | | | | | | |
| Softwood | 3,426 | 44 | 54 | 6 | 2,167 | 809 | 346 |
| Hardwood | 80,218 | 11,650 | 11,617 | 5,086 | 25,175 | 12,386 | 14,304 |
| Total | 83,644[2] | 11,694 | 11,671 | 5,092 | 27,342 | 13,195 | 14,650 |

1/ Poletimber and seedling and sapling stands and nonstocked and other areas.

2/ In addition there are 513 million board-feet of dead chestnut sawtimber, chiefly in Kentucky and Ohio.

Table 16.--Net volume of live sawtimber on commercial forest land by species group and state

(In million board-feet)

| Species | Total | Illinois | Indiana | Iowa | Kentucky | Missouri | Ohio |
|---|---|---|---|---|---|---|---|
| Softwoods: | | | | | | | |
| Shortleaf and loblolly pine | 1,897 | -- | 42 | -- | 1,085 | 536 | 234 |
| Hemlock | 432 | -- | -- | -- | 320 | -- | 112 |
| Cypress | 280 | 21 | 2 | -- | 42 | 215 | -- |
| Other | 817 | 23 | 10 | 6 | 720 | 58 | -- |
| Total softwoods | 3,426 | 44 | 54 | 6 | 2,167 | 809 | 346 |
| Hardwoods: | | | | | | | |
| White oak[1/] | 11,418 | 2,399 | 1,375 | 504 | 2,567 | 2,811 | 1,762 |
| Northern red oak[2/] | 6,045 | 1,172 | 1,044 | 532 | 1,692 | 491 | 1,114 |
| Other oaks | 22,167 | 3,022 | 2,094 | 614 | 8,647 | 5,057 | 2,733 |
| Yellow birch and sugar maple | 2,822 | 262 | 908 | 98 | 583 | 92 | 879 |
| Soft maple and beech | 6,748 | 782 | 1,226 | 462 | 2,535 | 229 | 1,514 |
| Sweetgum | 910 | 135 | 171 | -- | 512 | 51 | 41 |
| Tupelo and blackgum | 1,017 | 36 | 130 | -- | 648 | 140 | 63 |
| Hickory | 6,644 | 789 | 929 | 155 | 2,918 | 774 | 1,079 |
| Yellow-poplar | 3,649 | 161 | 614 | -- | 2,029 | 8 | 837 |
| Ash, basswood, and black walnut | 5,161 | 540 | 925 | 735 | 1,323 | 477 | 1,161 |
| Cottonwood and aspen | 1,843 | 336 | 162 | 616 | 138 | 465 | 126 |
| Other | 11,794 | 2,016 | 2,039 | 1,370 | 1,583 | 1,791 | 2,995 |
| Total hardwoods | 80,218 | 11,650 | 11,617 | 5,086 | 25,175 | 12,386 | 14,304 |
| Total, all species | 83,644 | 11,694 | 11,671 | 5,092 | 27,342 | 13,195 | 14,650 |

1/ Quercus alba and Q. prinus.
2/ Quercus borealis, Q. falcata var. pagodaefolia, and Q. schumardii.

Table 17.--Net volume of live sawtimber on commercial forest land by ownership class and state

(In million board-feet)

| Class of ownership | Total | Illinois | Indiana | Iowa | Kentucky | Missouri | Ohio |
|---|---|---|---|---|---|---|---|
| Federal ownership or trusteeship | | | | | | | |
| National forest | 3,444 | 468 | 153 | 4 | 1,420 | 1,212 | 187 |
| Other | 915 | 96 | 177 | 24 | 511 | 107 | -- |
| Total | 4,359 | 564 | 330 | 28 | 1,931 | 1,319 | 187 |
| State, county and municipal | 1,037 | 30 | 222 | 43 | 156 | 141 | 445 |
| Private | 78,248 | 11,100 | 11,119 | 5,021 | 25,255 | 11,735 | 14,018 |
| All ownerships | 83,644 | 11,694 | 11,671 | 5,092 | 27,342 | 13,195 | 14,650 |

Table 18.--Net volume of live sawtimber on commercial forest land by species group and diameter class

(In million board-feet)

| Species group | Total | D.b.h. Class (inches) | | | |
|---|---|---|---|---|---|
| | | 9.0-10.9 | 11.0-14.9 | 15.0-18.9 | 19.0 and larger |
| Softwoods: | | | | | |
| Southern yellow pine | 2,477 | 693 | 1,271 | 372 | 141 |
| White and red pine | 68 | -- | 2 | 19 | 47 |
| Other softwoods | 881 | 116 | 242 | 219 | 304 |
| All softwoods | 3,426 | 809 | 1,515 | 610 | 492 |
| Hardwoods: | | | | | |
| White oaks | 19,004 | -- | 7,895 | 5,325 | 5,784 |
| Red oaks | 20,626 | -- | 7,293 | 6,344 | 6,989 |
| Sweetgum, tupelo and blackgum | 1,927 | -- | 756 | 614 | 557 |
| Yellow-poplar | 3,649 | -- | 1,277 | 1,260 | 1,112 |
| Yellow birch | -- | -- | -- | -- | -- |
| Sugar maple | 2,822 | -- | 949 | 798 | 1,075 |
| Beech | 3,849 | -- | 737 | 1,116 | 1,996 |
| Other hardwoods | 28,341 | -- | 10,901 | 8,008 | 9,432 |
| All hardwoods | 80,218 | -- | 29,808 | 23,465 | 26,945 |
| All species | 83,644 | 809 | 31,323 | 24,075 | 27,437 |

Table 19.--Sound volume in cull and dead timber and hardwood limbs on commercial forest land

(In million cubic feet)

| Class of material | Total | Illinois | Indiana | Iowa | Kentucky | Missouri | Ohio |
|---|---|---|---|---|---|---|---|
| Cull trees: | | | | | | | |
| Sound | 1,723 | 132 | 63 | 189 | 195 | 999 | 145 |
| Rotten | 2,956 | 258 | 312 | 95 | 993 | 992 | 306 |
| Total cull trees | 4,679 | 390 | 375 | 284 | 1,188 | 1,991 | 451 |
| Hardwood limbs | 7,508 | 1,076 | 950 | 320 | 2,339 | 1,890 | 933 |
| Salvable dead trees | 110 | -- | -- | -- | 99 | -- | 11 |
| Total | 12,297 | 1,466 | 1,325 | 604 | 3,626 | 3,881 | 1,395 |

Table 20.--Net annual growth of growing stock on commercial forest land by species and state

MILLION CUBIC FEET

| Species group | Total | Illinois | Indiana | Iowa | Kentucky | Missouri | Ohio |
|---|---|---|---|---|---|---|---|
| Softwoods: | | | | | | | |
| White, red, and jack pine | 33 | -- | 1 | — | 21 | 8 | 3 |
| Southern yellow pine | -- | -- | -- | -- | -- | -- | -- |
| Spruce and fir | 13 | 1 | -- | 1/ | 7 | 4 | 1 |
| Other softwoods | 46 | 1 | 1 | 1/ | 28 | 12 | 4 |
| Total | | | | | | | |
| Soft hardwoods: | | | | | | | |
| Yellow-poplar | 40 | 2 | 6 | -- | 23 | -- | 9 |
| Other soft hardwoods | 218 | 32 | 30 | 39 | 43 | 38 | 36 |
| Total | 258 | 34 | 36 | 39 | 66 | 38 | 45 |
| Hard hardwoods: | | | | | | | |
| Oaks | 538 | 67 | 51 | 16 | 165 | 179 | 60 |
| Beech, yellow-birch and hard maple | 71 | 4 | 17 | 2 | 29 | 2 | 17 |
| Other hardwoods | 234 | 29 | 34 | 11 | 77 | 39 | 44 |
| Total | 843 | 100 | 102 | 29 | 271 | 220 | 121 |
| Total, all species | 1,147 | 135 | 139 | 68 | 365 | 270 | 170 |

MILLION CORDS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Softwoods: | | | | | | | |
| White, red, and jack pine | -- | -- | -- | -- | 2/ | -- | -- |
| Southern yellow pine | 0.5 | -- | 2/ | -- | 0.3 | 0.1 | 0.1 |
| Spruce and fir | -- | -- | -- | -- | -- | -- | -- |
| Other softwoods | .2 | 2/ | -- | 2/ | .1 | .1 | 2/ |
| Total | 0.7 | 2/ | 2/ | 2/ | 0.4 | 0.2 | 0.1 |
| Soft hardwoods: | | | | | | | |
| Yellow-poplar | 0.6 | 2/ | 0.1 | -- | 0.4 | -- | 0.1 |
| Other softhardwoods | 3.4 | .5 | .5 | 0.6 | .6 | 0.6 | .6 |
| Total | 4.0 | 0.5 | 0.6 | 0.6 | 1.0 | 0.6 | 0.7 |
| Hard hardwoods: | | | | | | | |
| Oaks | 8.3 | 1.0 | 0.8 | 0.3 | 2.5 | 2.8 | 0.9 |
| Beech, yellow-birch and hard maple | 1.2 | .1 | .3 | 2/ | .5 | | .3 |
| Other hardwoods | 3.7 | .5 | .5 | .2 | 1.2 | .6 | .7 |
| Total | 13.2 | 1.6 | 1.6 | 0.5 | 4.2 | 3.4 | 1.9 |
| Total, all species | 17.9 | 2.1 | 2.2 | 1.1 | 5.6 | 4.2 | 2.7 |

1/ Less than 500 thousand cubic feet.
2/ Less than 50 thousand cords.

Table 21.--Net annual growth of sawtimber on commercial forest land by species and state

(In million board-feet)

| Species group | Total | Illinois | Indiana | Iowa | Kentucky | Missouri | Ohio |
|---|---|---|---|---|---|---|---|
| Softwoods: | | | | | | | |
| White, red, and jack pine | 6 | -- | -- | -- | 6 | -- | -- |
| Southern yellow pine | 184 | -- | 2 | -- | 144 | 29 | 9 |
| Spruce and fir | -- | -- | -- | -- | -- | -- | -- |
| Other softwoods | 59 | 2 | -- | -- | 38 | 15 | 4 |
| Total | 249 | 2 | 2 | -- | 188 | 44 | 13 |
| Soft hardwoods | | | | | | | |
| Yellow-poplar | 163 | 7 | 26 | -- | 98 | 1/ | 32 |
| Other soft hardwoods | 758 | 116 | 114 | 135 | 146 | 135 | 112 |
| Total | 921 | 123 | 140 | 135 | 244 | 135 | 144 |
| Hard hardwoods: | | | | | | | |
| Oaks | 1,867 | 279 | 192 | 56 | 627 | 500 | 213 |
| Beech, yellow-birch and hard maple | 299 | 14 | 71 | 8 | 134 | 6 | 66 |
| Other hardwoods | 632 | 78 | 92 | 25 | 217 | 100 | 120 |
| Total | 2,798 | 371 | 355 | 89 | 978 | 606 | 399 |
| Total, all species | 3,968 | 496 | 497 | 224 | 1,410 | 785 | 556 |

1/ Less than 0.5 million board-feet.

Table 22.--Annual mortality of sawtimber and growing stock on commercial forest land by cause and state

SAWTIMBER

(In million board-feet)

| Cause | Total | Illinois | Indiana | Iowa | Kentucky | Missouri | Ohio |
|---|---|---|---|---|---|---|---|
| Fire | 42 | 2 | 2 | 0 | 13 | 23 | 2 |
| Disease | 105 | 19 | 8 | 12 | 27 | 28 | 11 |
| Other[1/] | 152 | 38 | 9 | 15 | 50 | 28 | 12 |
| Total, all causes | 299 | 59 | 19 | 27 | 90 | 79 | 25 |

GROWING STOCK

(In million cubic feet)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Fire | 21 | 1 | 1 | 1 | 6 | 11 | 1 |
| Disease | 27 | 5 | 2 | 2 | 9 | 6 | 3 |
| Other[1/] | 50 | 9 | 4 | 5 | 15 | 13 | 4 |
| Total, all causes | 98 | 15 | 7 | 8 | 30 | 30 | 8 |

1/ Weather, animals, suppression, etc.

Table 23.--Timber products output[1/] by product and state

| Product | Unit of Measure | Total | Illinois | Indiana | Iowa | Kentucky | Missouri | Ohio |
|---|---|---|---|---|---|---|---|---|
| Sawlogs for lbr. | Lbr. tally (MBF) | 1,360,167 | 110,000 | 190,300 | 87,992 | 522,500 | 200,300 | 249,075 |
| Veneer logs | Thousand BF[2/] | 62,681 | 11,000 | 12,000 | 4,681 | 13,000 | 10,000 | 12,000 |
| Cooperage bolts | Thousand BF[2/] | 117,088 | 11,200 | 3,000 | 3,488 | 37,500 | 52,500 | 9,400 |
| Pulpwood | Cords | 137,237 | 45,000 | 12,000 | 3,237 | 30,000 | 12,000 | 35,000 |
| Fuelwood | Cords | 4,120,233 | 353,300 | 410,400 | 383,433 | 1,511,900 | 1,074,100 | 387,100 |
| Piling | Thousand linear feet | 258 | 172 | -- | -- | -- | 50 | 36 |
| Posts | Thousand pieces | 44,194 | 5,000 | 4,400 | 2,424 | 13,800 | 14,000 | 4,570 |
| Mine timbers | Thousand Cu. ft. | 18,105 | 2,780 | 825 | -- | 10,000 | 3,100 | 1,400 |
| Other | Thousand Cu. ft. | 16,293 | 776 | 1,810 | 378 | 7,048 | 4,360 | 1,921 |

1/ Estimates of timber products output include both roundwood and plant residues.
2/ International 1/4-inch log rule.

Table 24 --Timber cut from growing stock on commercial forest land by selected products, by softwood and hardwood, and by state
(In thousand cubic-feet)

| Product | Total | Illinois | Indiana | Iowa | Kentucky | Missouri | Ohio |
|---|---|---|---|---|---|---|---|
| Sawlogs | | | | | | | |
| Softwood | 12,195 | 92 | 53 | 276 | 7,320 | 4,050 | 404 |
| Hardwood | 207,926 | 19,717 | 33,232 | 14,830 | 75,681 | 27,866 | 36,600 |
| Veneer logs | | | | | | | |
| Softwood | 57 | -- | -- | -- | 57 | -- | -- |
| Hardwood | 11,222 | 2,173 | 2,313 | 826 | 2,132 | 1,806 | 1,972 |
| Cooperage bolts | | | | | | | |
| Softwood | -- | -- | -- | -- | -- | -- | -- |
| Hardwood | 20,716 | 2,212 | 577 | 615 | 6,282 | 9,486 | 1,544 |
| Pulpwood | | | | | | | |
| Softwood | 322 | -- | -- | -- | 119 | 202 | 1 |
| Hardwood | 7,622 | 2,567 | 744 | 202 | 1,558 | 382 | 2,169 |
| Fuelwood | | | | | | | |
| Softwood | 55 | -- | -- | -- | -- | 55 | -- |
| Hardwood | 104,510 | 6,836 | 10,818 | 7,418 | 46,562 | 27,341 | 5,535 |
| Piling | | | | | | | |
| Softwood | -- | -- | -- | -- | -- | -- | -- |
| Hardwood | 169 | 114 | -- | -- | -- | 30 | 25 |
| Posts | | | | | | | |
| Softwood | 4,188 | -- | 92 | -- | 2,494 | 1,602 | -- |
| Hardwood | 16,734 | 1,200 | 2,197 | 609 | 5,795 | 4,121 | 2,812 |
| Other products | | | | | | | |
| Softwood | 205 | -- | -- | -- | 144 | 60 | 1 |
| Hardwood | 27,405 | 3,044 | 2,050 | 378 | 13,422 | 6,503 | 2,008 |
| All products | | | | | | | |
| Softwood | 17,022 | 92 | 145 | 276 | 10,134 | 5,969 | 406 |
| Hardwood | 396,304 | 37,863 | 51,931 | 24,878 | 151,432 | 77,535 | 52,665 |
| Total | 413,326 | 37,955 | 52,076 | 25,154 | 161,566 | 83,504 | 53,071 |

Table 25.--Volume of plant residues from primary manufacturing

(In thousand cubic-feet)

| Industry and type of residue | Produced | Used for | | | Total utilized | Unused |
|---|---|---|---|---|---|---|
| | | Fuel | Fibre | Other | | |
| Lumber: | | | | | | |
| Coarse[1] | 40,739 | 26,138 | -- | 4,631 | 30,769 | 9,970 |
| Fine[2] | 25,610 | 10,015 | -- | 6,590 | 16,605 | 9,005 |
| Veneer: | | | | | | |
| Coarse | 2,023 | 1,145 | 465 | 359 | 1,969 | 54 |
| Fine | 2,004 | 1,776 | -- | 19 | 1,795 | 209 |
| Cooperage: | | | | | | |
| Coarse | 9,168 | 6,087 | -- | 19 | 6,106 | 3,062 |
| Fine | 3,300 | 154 | -- | 1,505 | 1,659 | 1,641 |
| Other: | | | | | | |
| Coarse | 1,991 | 1,895 | -- | -- | 1,895 | 96 |
| Fine | 3,441 | 2,580 | -- | 359 | 2,939 | 502 |
| All industries: | | | | | | |
| Total coarse | 53,921 | 35,265 | 465 | 5,009 | 40,739 | 13,182 |
| Total fine | 34,355 | 14,525 | -- | 8,473 | 22,998 | 11,357 |
| Total | 88,276 | 49,790 | 465 | 13,482 | 63,737 | 24,539 |

[1] Coarse residues include slabs, edgings, trimmings, miscuts, veneer cores, cull pieces, and other material generally suitable for chipping.

[2] Fine residues include sawdust, shavings, veneer clippings, wood removed in barking, screenings, and other material generally too small for chipping.

TERRITORY SERVED BY THE

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